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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/804,522	03/12/2001	Paul E. Johnson	W02.101	9091

26344 7590 04/27/2005

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EXAMINER


LAVARIAS, ARNEL C

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 04/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/804,522	Applicant(s) JOHNSON, PAUL E. 	
	Examiner Arnel C. Lavarias	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Response to Arguments

1. In view of the decision by the Board of Patent Appeals and Interferences dated 3/23/05, PROSECUTION IS HEREBY REOPENED. New grounds of rejections are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

A handwritten signature in black ink, appearing to read 'Drew Dunn', is written over a horizontal line.

Drew Dunn
Supervisory Patent Examiner
Group Art Unit 2872

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2, 6-8, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maekawa et al. (U.S. Patent No. 5644388), of record, in view of McDermott (U.S. Patent No. 5898267).

Maekawa et al. discloses an LED illumination source device for use in a flow particle detection device, such as in a flow cytometer (See Figures 1, 3, 5, 6, 9; col. 3, line 56-col. 5, line 62), comprising an LED (See 16 in Figure 5; 29 in Figure 9; col. 5, lines 6-13) for providing light at a selected wavelength, and an optical element (See 29, 30, 21 in Figure 9) for collecting light from the LED and concentrating the collected light at a selected volume within a flow sample stream. Maekawa et al. additionally discloses the optical element comprising a collecting element (See 29, 30 in Figure 9) and a focusing element (See 21 in Figure 9). Additionally, Maekawa et al. discloses a particle detection apparatus, such as a flow cytometer (See Figures 1, 3, 5, 6, 9; col. 3, line 56-col. 5, line 62), comprising equipment for passing the sample stream through the flow zone (See 1, 2 in Figures 1, 3, 5, 6, 9), an illumination device (See 16 in Figure 5; 29 in Figure 9), and a detector assembly (See 14 in Figure 9), which includes a detector that detects light emitted or scattered from illuminated target particles resulting from illumination, wherein the illumination device includes an LED (See col. 5, lines 6-13) for providing light at a

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selected wavelength and an optical element (See 30, 21 in Figure 9) for collecting light from the LED and concentrating the collected light at a selected volume within a flow sample stream. Maekawa et al. additionally discloses the optical element comprising a collecting element (See 29, 30 in Figure 9) and a focusing element (See 21 in Figure 9).

Maekawa et al. discloses the invention as set forth above, except for the element collecting nearly all the light from the LED. However, it is well known and conventional in the art for LED's to include an integrated, encapsulating optical element through which all the light generated from the LED must pass through, prior to being routed to another location. For example, McDermott teaches a conventional LED element (See for example Figures 1, 3-4, 6, 8-9), wherein the LED element (See for example 1 in Figure 3) is totally encapsulated by an element (See 11 in Figure 1), whereby light generated by the LED element must pass through the encapsulating element. Thus, this encapsulating element collects most, if not all, of the light generated by the LED element and routes this light. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the element in the source and apparatus of Maekawa et al. collect nearly all the light from the LED, as taught by McDermott, to take advantage of the more compact, more precise, and more efficient design of the LED provided by McDermott, thus increasing light throughput.

4. Claims 4, 10-11, 14, 18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maekawa et al. in view of McDermott as applied to Claims 1, 7 above, and further in view of Martin et al. (U.S. Patent No. 4573796), of record.

Maekawa et al. in view of McDermott discloses the invention as set forth above in Claims 1 and 7, except for the LED providing light at two selected wavelengths.

However, Martin et al. teaches a multiple source flow cytometer apparatus (See Figure 1) wherein two sources (See 10 and 12 in Figure 1) with two different wavelengths (See col. 3, line 62-col. 4, line 20) are used to illuminate the particle flow (See 16 in Figure 1) to induce fluorescence and light scattering. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate sources providing light at different wavelengths, as taught by Martin et al., in the particle detection apparatus as disclosed by Maekawa et al. in view of McDermott. One would have been motivated to do this to provide source illumination for multiple dyes that may be bound to the particles in the sample flow and to additionally eliminate background noise due to cross-interference in multiple light sources measurements.

5. Claims 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maekawa et al. in view of McDermott as applied to Claims 1, 7, 14 above, and further in view of Martin et al.

Maekawa et al. in view of McDermott discloses the invention as set forth above in Claims 1, 7, and 14, except for the detector assembly comprising two detectors. However, Martin et al. teaches a multiple source flow cytometer apparatus (See Figure 1) wherein two or more detectors (See for example 24, 26, 32, 34 in Figure 1) are used to detect the fluorescence and scattered light from the sample particle flow (See 16 in Figure 1). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate multiple detectors, as taught by Martin et al.,

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in the particle detection apparatus as disclosed by Maekawa et al. in view of McDermott.

One would have been motivated to do this to detect fluorescence and scattered light at multiple wavelengths from multiple dyes attached to the particles in the sample particle flow, thus increasing the detection capability, range, and sensitivity of the system.

6. Claims 12 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maekawa et al. in view of McDermott as applied to Claims 1, 7, 14 above, and further in view of Martin et al.

Maekawa et al. in view of McDermott discloses the invention as set forth above in Claims 1, 7, and 14, except for the sample stream including two fluorescent dyes that emit at two different wavelengths. However, Martin et al. teaches a multiple source flow cytometer apparatus (See Figure 1) wherein the particles in the sample particle flow are stained with two or more fluorescent dyes (See col. 3, line 62-col. 4, line 20), each dye fluorescing at different wavelengths. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide multiple fluorescent dyes on the particles in the sample particle flow, as taught by Martin et al., in the particle detection apparatus as disclosed by Maekawa et al. One would have been motivated to do this to detect multiple components of the particles in the sample particle flow, thus increasing the detection capability, range, and sensitivity of the system.

7. Claims 3, 9, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maekawa et al. in view of McDermott as applied to Claims 1, 7, 14 above, and further in view of Martin et al.

Maekawa et al. in view of McDermott, and further in view of Martin et al. discloses the invention as set forth above in Claims 1, 7, and 14, except for the collecting element being a ball lens. However, it is well known and conventional in the art to utilize ball lenses as optical elements to provide focusing and collimating functions within an optical system. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a ball lens to collect the illumination light from the light source since it is well known in the art of optics and lasers to use a ball lens to collect and collimate light from light emitting diodes and laser diodes. One would have been motivated to do this to increase the volume of the particle flow that is irradiated and therefore to increase the fluorescence collection efficiency.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maekawa et al. in view of McDermott as applied to Claim 1 above, and further in view of Ross et al. (U.S. Patent No. 5877863).

Maekawa et al. in view of McDermott discloses the invention as set forth above in Claim 1, except for the LED being a side-emitting lensless LED. However, Ross et al. teaches a photometric diagnostic instrument (See for example Figure 1 or Figure 2) wherein the light sources (See 20 in Figure 1 or Figure 2) utilized are surface mount lensless LEDs (See col. 4, line 66-col. 5, line 16; Figure 7). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate lensless LEDs as the light source, as taught by Ross et al., in the LED illumination source device as disclosed by Maekawa et al. in view of McDermott. One

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would have been motivated to do this to provide a more uniformly diverging source for illumination prior to focusing using a lens.

Conclusion

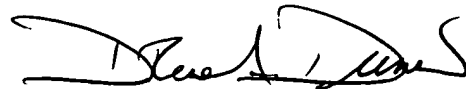
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 571-272-2315. The examiner can normally be reached on M-F 9:30 AM - 6 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Arnel C. Lavarias
4/18/05



DREW A. DUNN
SUPERVISORY PATENT EXAMINER